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EXAMINER	
BOKHARI, SYED M	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/791,544	Applicant(s) CHO ET AL.	
	Examiner SYED BOKHARI	Art Unit 2473	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.	6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on March 24th, 2010 has been entered. Claims 1-28 are still pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 3-6, 8-11, 13, 17-19, 21 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (USP 184,421 B1) in view of Flammer, III (US 5,488,608) and further in view of Engel et al. (US 6,115,393).

Liu et al. discloses a communication system for techniques that use network topology information to build and maintain a dynamically ad-hoc network with the following features: regarding claim 1, a system for reliably broadcasting a data packet under an ad-hoc network environment, the system comprising (Fig. 1, controlled flood multicast network nodes in ad-hoc network environment, see “ad-hoc network capable of efficiently routing both multicast and unicast traffic” recited in column 2 lines 59-66); and a control unit which determines whether or not the data packet is retransmitted to the predetermined neighboring node by the at least node according to a result of the comparison (Fig. 2B, a typical CFM communication node, see “ the node uses a controlled-flood technique to dynamically determine whether it should rebroadcast a flooded message based upon the present state” recited in column 5 lines 46-59); regarding claim 4, wherein the data packet includes at least one of Internet protocol addresses of neighboring nodes, relay nodes, link status, and relay node sequence numbers (Fig. 17, processing a probe-request or probe-reply message, see “unicast message includes node identifier, a sequence number, a relay list” recited in column 28

lines 30-45); regarding claim 5, wherein the data packet includes at least one of Internet protocol addresses of neighboring nodes, relay nodes, link status, and relay node sequence numbers (Fig. 15, CFM technique by which a CFM node processes a controlled flood message, see “update the receiving CFM node link cache using relay list information contained in received message” recited in column 24 lines 57-65); regarding claim 6, a system for reliably broadcasting a data packet under an ad-hoc network environment, the system comprising (Fig. 1, controlled flood multicast network nodes in ad-hoc network environment, see “ad-hoc network capable of efficiently routing both multicast and unicast traffic” recited in column 2 lines 59-66), a determining unit which determines whether or not at least one node that receives the data packet is a relay node which transmits the received data packet to other neighboring nodes (Fig. 13, technique by which node determines whether to transmit data to neighbors" recited in column 23 lines 1-20) and a control unit which determines whether or not the data packet is retransmitted to the predetermined neighboring node by the at least one node that transmits the data packet according to a result of the comparison (Fig. 2B, a typical CFM communication node, see “ the node uses a controlled-flood technique to dynamically determine whether it should rebroadcast a flooded message based upon the present state” recited in column 5 lines 46-59); regarding claim 9, wherein the data packet includes at least one of Internet protocol addresses of neighboring nodes, relay nodes, link status, and relay node sequence numbers (Fig. 17, processing a probe-request or probe-reply message, see “unicast message includes node identifier, a sequence number, a relay list” recited in column 28 lines 30-45); regarding claim 10,

(Fig. 15, CFM technique by which a CFM node processes a controlled flood message, see “update the receiving CFM node link cache using relay list information contained in received message” recited in column 24 lines 57-65); regarding claim 11, a method for reliably broadcasting a data packet under an ad-hoc network environment, the method comprising (Fig. 1, controlled flood multicast network nodes in ad-hoc network environment, see “ad-hoc network capable of efficiently routing both multicast and unicast traffic” recited in column 2 lines 59-66), broadcasting the data packet to neighboring nodes (Fig. 13, technique by which node determines whether to transmit data to neighbors" recited in column 23 lines 1-20) and determining whether or not the data packet is retransmitted to the neighboring nodes by the neighboring nodes according to a result of the comparison (Fig. 2B, a typical CFM communication node, see “if the designated destination matches the identifier of the receiving node, the message is forwarded” recited in column 29 lines 30-38); regarding claim 13, wherein the step of comparing comprises receiving the management packet from the neighboring nodes (Fig. 18, technique for forwarding CFM unicast message, see "when a node receives a unicast message" recited in column 29 lines 26-27) and comparing the first relay node sequence number contained in a received management packet with a second relay node sequence number stored in a neighbor table of the node broadcasting the data packet (Fig. 18, technique for forwarding CFM unicast message, see "comparing the sequence number and node identifier against the stored list" recited in column 29 lines 26-32 and column 14 lines 11-22); regarding claim 17, wherein the data packet includes at least one of Internet protocol addresses of neighboring nodes,

relay nodes, link status, and relay node sequence numbers (Fig. 17, processing a probe-request or probe-reply message, see “unicast message includes node identifier, a sequence number, a relay list” recited in column 28 lines 30-45); regarding claim 18, wherein the neighbor table is updated on the basis of information of the management packet each of the predetermined number of times (Fig. 15, CFM technique by which a CFM node processes a controlled flood message, see “update the receiving CFM node link cache using relay list information contained in received message” recited in column 24 lines 57-65); regarding claim 19, a method for reliably broadcasting a data packet under an ad-hoc network environment, the method comprising (Fig. 1, controlled flood multicast network nodes in ad-hoc network environment, see “ad-hoc network capable of efficiently routing both multicast and unicast traffic” recited in column 2 lines 59-66), checking whether at least one node operable to receive the data packet is a relay node, as a result of checking, when the node is a relay node, broadcasting the data packet to neighboring nodes (Fig. 13, technique by which node determines whether to transmit data to neighbors" recited in column 23 lines 1-20) and determining whether or not the data packet is retransmitted to the neighboring nodes according to a result of the comparison (Fig. 2B, a typical CFM communication node, see “if the designated destination matches the identifier of the receiving node, the message is forwarded” recited in column 29 lines 30-38); regarding claim 21, wherein the step of comparing comprises receiving the management packet from the neighboring nodes (Fig. 18, technique for forwarding CFM unicast message, see "when a node receives a unicast message" recited in column 29 lines 26-27) and comparing the first relay node

sequence number contained in a received management packet with a second relay node sequence number stored in a neighbor table of the at least one node (Fig. 18, technique for forwarding CFM unicast message, see "comparing the sequence number and node identifier against the stored list" recited in column 29 lines 26-32 and column 14 lines 11-22); regarding claim 25, wherein the data packet includes at least one of Internet protocol addresses of the neighboring nodes, relay nodes, link status, and relay node sequence numbers (Fig. 17, processing a probe-request or probe-reply message, see “unicast message includes node identifier, a sequence number, a relay list” recited in column 28 lines 30-45); regarding claim 26, wherein the neighbor table is updated on the basis of information of the management packet each of the predetermined number of times (Fig. 15, CFM technique by which a CFM node processes a controlled flood message, see “update the receiving CFM node link cache using relay list information contained in received message” recited in column 24 lines 57-65); regarding claim 27, further comprising the step of; as a result of checking, when the node is not the relay node, storing information of the received data packet in the neighbor table (Fig 18A, technique for forwarding CFM unicast message, see "message is copied and stored step 424" recited in column 28 lines 59-67) and regarding claim 28, wherein the management packet is transmitted by a node which receives the data packet transmitted by the at least one node (Fig. 18, technique for forwarding CFM unicast message, see "comparing the message sequence number and originating node identifier and the forward the message" recited in column 29 lines 30-33).

Liu et al. do not disclose the following features: regarding claim 1, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet transmitted a predetermined neighboring node received by at least one node transmitting the data packet to the predetermined neighboring node the second relay node sequence number being stored in a neighbor table of the at least one node, the memory unit which stores information of the data packet before the data packet is transmitted to the predetermined neighboring node, wherein the information of the data packet comprises the second relay node sequence number, wherein the comparing is performed in the at least one node transmitting the data packet; regarding claim 3, wherein the memory unit comprises the neighbor table wherein the neighbor table is updated on the basis of information of the management packet received by the at least one node; regarding claim 6, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet transmitted a predetermined neighboring node which is received by at least one node transmits a data packet to the predetermined neighboring node the second relay node sequence number being stored in a neighbor table of the at least one node that transmits the data packet, the memory unit which stores information of the data packet before the data packet is transmitted to the predetermined neighboring node, wherein the information of the data packet comprises the second relay node sequence number, wherein the comparing is performed in the at least one node transmitting the data packet; regarding claim 8, wherein the memory unit comprises the

neighbor table wherein the neighbor table is updated on the basis of information of the management packet received by the at least one node; regarding claim 11, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet received from the neighboring nodes after broadcasting the data packet to neighboring nodes, the second relay node sequence number being stored in a neighbor table of a broadcasting node which broadcast broadcasting the data packet to the neighboring nodes, storing information of the data packet before the data packet is transmitted to the destination node, wherein the information of the data packet comprises the second relay node sequence number, wherein the comparing is performed in the at least one node transmitting the data packet; regarding claim 19, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet which each of the neighboring nodes transmits after broadcasting the data packet to neighboring nodes the second relay node sequence number being stored in a neighbor table of the at least one node, storing information of the data packet before the data packet is transmitted, wherein the information of the data packet comprises the second relay node sequence number, wherein the comparing is performed in the at least one node transmitting the data packet.

Flammer, III discloses a communication network for routing data packet where the best paths between nodes are stored in a routing table generated at each node with the following features: regarding claim 1, the memory unit which stores information of

the data packet before the data packet is transmitted to the predetermined neighboring node, wherein the information of the data packet comprises the second relay node sequence number (Fig. 1, a block diagram illustrating a general data network topology, see “node W stores that information in a routing table and before transmitting the packet checks its routing table” recited in column 3 lines 46-67 and column 4 lines 1-6); regarding claim 3, wherein the memory unit comprises the neighbor table wherein the neighbor table is updated on the basis of information of the management packet received by the at least one node (Fig. 1, a block diagram illustrating a general data network topology, see “node W stores that information in a routing table and before transmitting the packet checks its routing table” recited in column 3 lines 65-67 and column 4 lines 1-6); regarding claim 6, the memory unit which stores information of the data packet before the data packet is transmitted to the predetermined neighboring node, wherein the information of the data packet comprises the second relay node sequence number(Fig. 1, a block diagram illustrating a general data network topology, see “node W stores that information in a routing table and before transmitting the packet checks its routing table” recited in column 3 lines 46-67 and column 4 lines 1-6); regarding claim 8, wherein the memory unit comprises the neighbor table wherein the neighbor table is updated on the basis of information of the management packet received by the at least one node (Fig. 1, a block diagram illustrating a general data network topology, see “node W stores that information in a routing table and before transmitting the packet checks its routing table” recited in column 3 lines 65-67 and column 4 lines 1-6); regarding claim 11, storing information of the data packet before

the data packet is transmitted to the destination node, wherein the information of the data packet comprises the second relay node sequence number (Fig. 1, a block diagram illustrating a general data network topology, see "node W stores that information in a routing table and before transmitting the packet checks its routing table" recited in column 3 lines 46-67 and column 4 lines 1-6); regarding claim 19, storing information of the data packet before the data packet is transmitted, wherein the information of the data packet comprises the second relay node sequence number (Fig. 1, a block diagram illustrating a general data network topology, see "node W stores that information in a routing table and before transmitting the packet checks its routing table" recited in column 3 lines 46-67 and column 4 lines 1-6).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the system of Liu et al. by using the features, as taught by Flammer, III, in order to provide the memory unit which stores information of the data packet before the data packet is transmitted to the destination node, wherein the information of the data packet comprises the second relay node sequence number, the memory unit comprises the neighbor table wherein the neighbor table is updated on the basis of information of the management packet received by the at least one node. The motivation of using these functions is to enhance the system in a cost effective manner.

Liu et al. and Flammer III do not disclose the following features: regarding claim 1, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet transmitted from a predetermined neighboring node received by at

least one node transmitting the data packet to the predetermined neighboring node the second relay node sequence number being stored in a neighbor table of the at least one node, wherein the comparing is performed in the at least one node transmitting the data packet; regarding claim 6, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet transmitted from a predetermined neighboring node which is received by at least one node transmits a data packet to the predetermined neighboring node the second relay node sequence number being stored in a neighbor table of the at least one node that transmits the data packet, wherein the comparing is performed in the at least one node transmitting the data packet; regarding claim 11, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet received from the neighboring nodes after broadcasting the data packet to neighboring nodes, the second relay node sequence number being stored in a neighbor table of a broadcasting node which broadcast broadcasting the data packet to the neighboring nodes, wherein the comparing is performed in the at least one node transmitting the data packet; regarding claim 19, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet which each of the neighboring nodes transmits after broadcasting the data packet to neighboring nodes the second relay node sequence number being stored in a neighbor table of the at least one node, wherein the comparing is performed in the at least one node transmitting the data packet.

Engel et al. disclose monitoring communications which occur in a network of nodes, each communication being effected by a transmission of one or more packets among two or more communicating nodes, each communication complying with a predefined communication protocol selected from among protocols available in the network. The contents of packets are detected passively and in real time, communication information associated with multiple protocols is derived from the packet contents with the following features: regarding claim 1, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet transmitted from a predetermined neighboring node received by at least one node transmitting the data packet to the predetermined neighboring node the second relay node sequence number being stored in a neighbor table of the at least one node (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see “It detects this by comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table” recited in column 23 line 67 and column 24 lines 1-11), wherein the comparing is performed in the at least one node transmitting the data packet (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see “comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table” recited in column 24 lines 3-6); regarding claim 6, comparing a first relay node

sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet transmitted from a predetermined neighboring node which is received by at least one node transmits a data packet to the predetermined neighboring node the second relay node sequence number being stored in a neighbor table of the at least one node that transmits the data packet (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see “It detects this by comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table” recited in column 23 line 67 and column 24 lines 1-11), wherein the comparing is performed in the at least one node transmitting the data packet (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see “comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table” recited in column 24 lines 3-6); regarding claim 11, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet received from the neighboring nodes after broadcasting the data packet to neighboring nodes, the second relay node sequence number being stored in a neighbor table of a broadcasting node which broadcast broadcasting the data packet to the neighboring nodes (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see “It detects this by

comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table" recited in column 23 line 67 and column 24 lines 1-11), wherein the comparing is performed in the at least one node transmitting the data packet (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see "comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table" recited in column 24 lines 3-6); regarding claim 19, comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet which each of the neighboring nodes transmits after broadcasting the data packet to neighboring nodes the second relay node sequence number being stored in a neighbor table of the at least one node (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see "It detects this by comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table" recited in column 23 line 67 and column 24 lines 1-11), wherein the comparing is performed in the at least one node transmitting the data packet (Fig. 12, a flow diagram of the Look.sub.-- for.sub.-- Retransmission routine which is called by the Look.sub.-- at.sub.-- History routine, see "comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of

data packets that were previously sent as reported in the history table" recited in column 24 lines 3-6).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the system of Liu et al. with Flammer by using the features, as taught by Engel et al. in order to provide the memory unit which stores information of the data packet before the data packet is transmitted to the destination node, wherein the information of the data packet comprises the second relay node sequence number, the memory unit comprises the neighbor table wherein the neighbor table is updated on the basis of information of the management packet received by the at least one node. The motivation of using these functions is to enhance the system in a cost effective manner.

6. Claims 2, 7, 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (USP 184,421 B1) in view of Flammer, III (US 5,488,608) and further in view of Engel et al. (US 6,115,393) as applied to claims 1, 6, 11 and 19 above, and further in view of Ogier (US 7,031,288 B2).

Liu et al., Flammer, III and Engel et al. disclose the claimed limitations as described in paragraph 5 above. Liu et al., Flammer, III and Engel et al. do not disclose the following features: regarding claim 2, wherein the control unit transmits the data packet, wherein after adding "1" to the second relay node sequence number and the resulting sequence number is included in the data packet; regarding claim 7, wherein

the control unit transmits the data packet, wherein after adding "1" to the second relay node sequence number and the resulting sequence number is included in the data packet; regarding claim 12, wherein the step of broadcasting comprises adding "1" to the second relay node sequence number which is stored in the neighbor table of each of the neighboring nodes, adding the resulting relay node sequence number and predetermined information to the data packet, and regarding claim 20, wherein the step of broadcasting comprises adding "1" to the second relay node sequence number which is stored in the neighbor table of each of the neighboring nodes adding the resulting relay node sequence number and predetermined information to the data packet.

Ogier discloses a communication system for discovering new neighbor nodes and detecting the loss of existing neighbor nodes with the following features: regarding claim 2, wherein the control unit transmits the data packet, wherein after adding "1" to the second relay node sequence number (Fig. 1, mobile internet working system, see "sequence number is incremented each time a new broadcast packet is transmitted" recited in column 15 lines 39-41) and the resulting sequence number is included in the data packet (Fig. 1, mobile internet working system, see "include the broadcast sequence number to allow neighbor nodes to process the update message" recited in column 15 lines 52-60); regarding claim 7, wherein the control unit transmits the data packet, wherein after adding "1" to the second relay node sequence number (Fig. 1, mobile internet working system, see "sequence number is incremented each time a new broadcast packet is transmitted" recited in column 15 lines 39-41), the resulting sequence number is included in the data packet (Fig. 1, mobile internet working system,

see “include the broadcast sequence number to allow neighbor nodes to process the update message” recited in column 15 lines 52-60); regarding claim 12, wherein the step of broadcasting comprises adding "1" to the second relay node sequence number which is stored in the neighbor table of each of the neighboring nodes (Fig. 1, mobile internet working system, see “sequence number is incremented each time a new broadcast packet is transmitted” recited in column 15 lines 39-41), adding the resulting relay node sequence number and predetermined information to the data packet (Fig. 1, mobile internet working system, see “include the broadcast sequence number to allow neighbor nodes to process the update message” recited in column 15 lines 52-60), and regarding claim 20, wherein the step of broadcasting comprises adding "1" to the second relay node sequence number which is stored in the neighbor table of each of the neighboring nodes (Fig. 1, mobile internet working system, see “sequence number is incremented each time a new broadcast packet is transmitted” recited in column 15 lines 39-41), adding the resulting relay node sequence number and predetermined information to the data packet (Fig. 1, mobile internet working system, see “include the broadcast sequence number to allow neighbor nodes to process the update message” recited in column 15 lines 52-60).

It would have been obvious to one of the ordinary skills in the art at the time of invention to modify the system of Liu et al. with Flammer, III and Engel et al by using the features, as taught by Ogier, in order to provide the function of a control unit transmitting the data packet after adding "1" to the second relay node sequence number and

including the resulting sequence number in the data packet. The motivation of using this function is to enhance the system functionalities in a cost effective manner.

7. Claims 14-16 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (USP 184,421 B1) in view of Flammer, III (US 5,488,608) and further in view of Engel et al. (US 6,115,393) as applied to claims 11, 15, 19 and 23 above, and further in view of Riihinen et al. (USP 6,697,331 B1) and Zhu et al. (USP 5,768,527).

Liu et al., Flammer, III and Engel et al. disclose the claimed limitations as described in paragraph 5 above. Liu et al. also discloses the following features: regarding claim 16, wherein, when the first and second relay node sequence numbers are not equal, the neighbor table is updated with a relatively large relay node sequence number (Fig. 3, CFM technique for beacon transmission, see "if cluster-head is identified with a greater number of cluster-head, table is updated" recited in column 17 lines 22-37) and regarding claim 24, wherein, when the first and second relay node sequence numbers are not equal, the neighbor table is updated with a relatively large relay node sequence number (Fig. 3, CFM technique for beacon transmission, see "if cluster-head is identified with a greater number of cluster-head, table is updated" recited in column 17 lines 22-37).

Liu et al., Flammer, III and Engel et al. do not disclose the following features: regarding claim 14, wherein the step of determining comprises as a result of the

comparison, when the first and second relay node sequence numbers are equal, terminating transmission of the data packet; and when the first and second relay node sequence numbers are not equal to each other, retransmitting the data packet to the neighboring nodes and regarding claim 22, wherein the step of determining comprises: as a result of the comparison, when the first and second relay node sequence numbers are equal, terminating transmission of the data packet; and when the first and second relay node sequence numbers are not equal, retransmitting the data packet to the neighboring nodes.

Riihinen et al. discloses cellular communications for link layer acknowledgement and retransmission with the following features: regarding claim 14, wherein the step of determining comprises: as a result of the comparison, when the first and second relay node sequence numbers are equal, terminating transmission of the data packet (Fig. 8, poll timer start, restart and cancel conditions, see "if sequence number is greater than or equal to poll timer cancels and retransmission stops" recited in column 4 lines 9-15 and column 11 lines 17-33 and 25-26) and when the first and second relay node sequence numbers are not equal to each other, retransmitting the data packet to the neighboring nodes (Fig. 8, poll timer start, restart and cancel conditions, see "if sequence number is greater then poll timer starts for retransmission" recited in column 4 lines 9-15 and column 11 lines 17-33) and regarding claim 22, wherein the step of determining comprises: as a result of the comparison, when the first and second relay node sequence numbers are equal, terminating transmission of the data packet (Fig. 8, poll timer start, restart and cancel conditions, see "if sequence number is greater than or

equal to poll timer cancels and retransmission stops" recited in column 4 lines 9-15 and column 11 lines 17-33 and 25-26) and when the first and second relay node sequence numbers are not equal, retransmitting the data packet to the neighboring nodes (Fig. 8, poll timer start, restart and cancel conditions, see "if sequence number is greater then poll timer starts for retransmission" recited in column 4 lines 9-15 and column 11 lines 17-33).

It would have been obvious to one of the ordinary skills in the art at the time of invention to modify the system of Liu et al. with Flammer, III and Engel et al. by using the features, as taught by Riihinen et al., in order to provide function of comparison so that when the first and second relay node sequence numbers are equal, terminating transmission of the data packet and when the first and second relay node sequence numbers are not equal to each other, retransmitting the data packet to the neighboring nodes. The motivation of using the function of comparison is to enhance the system functionalities in a cost effective manner.

Liu et al., Flammer, III, Engel et al. and Riihinen et al. do not disclose the following features: regarding claim 15, wherein a number of times for retransmitting the data packet is set to a predetermined number of times, and when the number of times the data packet has been retransmitted exceeds the set number of times, retransmitting the data packet is stopped and regarding claim 23, wherein retransmission of the data packet is set to occur a predetermined number of times, and when the number of times the data packet is retransmitted exceeds the set number of times, retransmitting the data packet is stopped.

Zhu et al. discloses a communication system for real time multimedia streaming with the following features: regarding claim 15, wherein a number of times for retransmitting the data packet is set to a predetermined number of times, and when the number of times the data packet has been retransmitted exceeds the set number of times, retransmitting the data packet is stopped (Fig. 3, multimedia streaming system, see “retransmission message includes number of copies for retransmission and for each retransmission request sent out a timer is started” recited in column 7 lines 50-59) and regarding claim 23, wherein retransmission of the data packet is set to occur a predetermined number of times, and when the number of times the data packet is retransmitted exceeds the set number of times, retransmitting the data packet is stopped (Fig. 3, multimedia streaming system, see “retransmission message includes number of copies for retransmission and for each retransmission request sent out a timer is started” recited in column 7 lines 50-59).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the system of Liu et al. with Flammer, III, Engel et al. and Riihinen et al. by using the features, as taught by Zhu et al., in order to provide the function wherein a number of times for retransmitting the data packet is set to a predetermined number of times, and when the number of times the data packet has been retransmitted exceeds the set number of times, retransmitting the data packet is stopped and regarding. The motivation of using the function of comparison is to enhance the system functionalities in a cost effective manner.

Response to Arguments

Applicant's arguments filed March 24th, 2010 have been fully considered but they are not persuasive. Applicant sates in the remarks "However, contrary to the Examiner's assertions, Engel does not teach at least the above elements of claim 1. As recited in claim 1, the first relay node sequence number is contained in the management packet transmitted from a predetermined neighboring node. However, the aspect of Engel cited by the Examiner only discloses that the current sequence number is provided by the real time parser (RTP). Therefore, Engel does not teach or suggest the first relay node sequence number being contained in a management packet transmitted from a predetermined neighboring node," as recited in claim 1". Examiner respectfully disagrees. Engel teaches the claimed limitations "comparing a first relay node sequence number with a second relay node sequence number the first relay node sequence number being contained in a management packet transmitted from a predetermined neighboring node received by at least one node transmitting the data packet to the predetermined neighboring node the second relay node sequence number being stored in a neighbor table of the at least one node" as recited in column 23 line 67 and column 24 lines 1-11. Engel teaches that routine searches back through the history and checks whether the same initiator node has sent data twice. It detects this by comparing the current sequence number of the packet as provided by the RTP with the sequence numbers of data packets that were previously sent as reported in the history table. If a retransmission is spotted, the retransmission counter in the dialog statistics data structure of STATS is incremented. If the sequence number is not found within the

history table, indicating that the received packet does not represent a retransmission, the retransmission counter is not incremented. Among the major modules which make up Monitor 10 is a real time kernel 20, a boot/load module 22, a driver 24, a test module 26, an SNMP Agent 28, a Timer module 30, a real time parser (RTP) 32, a Message Transport Module (MTM) 34, a statistics database (STATS) 36, an Event Manager (EM) 38, an Event Timing Module (ETM) 40 and a control module 42. Real Time Parser (RTP) 32 sees all frames on the network and it determines which protocols are being used and interprets the frames. The RTP includes a protocol parser and a state machine. The protocol parser parses a received frame in the "classical" manner, layer-by-layer, lowest layer first. The parsing is performed such that the statistical objects in STATS (i.e., the network parameters for which performance data is kept) are maintained. Which layers are to have statistics stored for them is determined by a parse control record that is stored in STATS (to be described later). As each layer is parsed, the RTP invokes the appropriate functions in the statistics module (STATS) to update those statistical objects which must be changed. The state machine within RTP 32 is responsible for tracking state as appropriate to protocols and connections. It is responsible for maintaining and updating the connection oriented statistical elements in STATS. In order to track connection states and events, the RTP invokes a routine within the state machine. This routine determines the state of a connection based on past observed frames and keeps track of sequence numbers. It is the routine that determines if a connection is in data transfer state and if a retransmission has occurred. The objectives of the state machine are to keep a brief history of events, state transitions,

and sequence numbers per connection; to detect data transfer state so that sequence tracking can begin; and to count inconsistencies but still maintain tracking while falling into an appropriate state (see figure 5). Applicant states in the remarks "Engel does not teach or suggest determining whether or not the data packet is retransmitted to the predetermined neighboring node according- to a result of comparing- the first relay node sequence number with the second relay node sequence number". Liu teaches this claimed limitations "a control unit which determines whether or not the data packet is retransmitted to the predetermined neighboring node by the at least node according to a result of the comparison as recited in column 5 lines 46-59. Liu teaches that a CFM communication node uses a controlled-flood technique to dynamically determine whether it should rebroadcast a flooded message based upon the present state of internally maintained network topology information. In this manner, the controlled flood technique dynamically adapts to changing mobility conditions. For unicast traffic, autonomous CFM nodes make intelligent routing decisions based upon a tiered hierarchy of locally maintained network topology information. If an individual node is unable to locate a path to a designated destination based upon its locally maintained information, the message can be routed within a minimum number of hops to a node that can. In this manner CFM network maintenance and routing overhead is distributed across the network.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED BOKHARI whose telephone number is (571)270-3115. The examiner can normally be reached on Monday through Friday 8:00-17:00 Hrs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang B. Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Syed Bokhari/
Examiner, Art Unit 2473
6/24/2010

/Steven HD Nguyen/
Primary Examiner, Art Unit 2473